

358. *PODICEPS MINOR* (Briss.).

(738.) *P. philippensis* (Bonn.), Swinhoe, P. Z. S. 1871, p. 415.

A very common resident; breeds at the end of June.

359. *PODICEPS AURITUS* (L.).

(739.) Not uncommon in winter.

XLII.—*Ornithological Notes.* By FRANK E. BEDDARD, M.A.,
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I. *On the Tongue of Zosterops.*

THE tongue of *Zosterops* has been figured by Dr. Gadow and described in the following words* :—"The simplest form [in the Tenuirostres] is represented by *Zosterops*. The tongue ends in two short filaments, whilst the greater portion of the tongue proper is not divided; dorsal and ventral aspect smooth, hinder portion of horny sheath projecting backwards with a few (about 3-4) horny spines."

Dr. Gadow has mentioned the species to which his observations refer as being *Zosterops lateralis*. I find some little differences in the tongues of *Zosterops simplex* (of which a specimen has lately died in the Zoological Society's Gardens) and of two individuals of a species which I found among the Prosector's stores labelled "*Zosterops* from Japan." In the tongue of *Zosterops simplex* the upper surface is not perfectly smooth and flat, but the lateral margins are bent upwards and slightly folded inwards. As shown in the woodcut (fig. 1, p. 511), the upper surface of the tongue is thus converted into a deepish trough, which extends backwards on to the hinder wider section of the tongue for about half its extent. The posterior margin of the tongue is merely concave, not deeply notched, as in *Zosterops lateralis*; instead of being

* "On the Suctorial Apparatus of the Tenuirostres," P. Z. S. 1883, p. 62 *et seq.* pl. xvi. fig. 2. Dr. Bowdler Sharpe ('A Review of Recent Attempts to Classify Birds,' Budapest, 1891, p. 86, footnote) says that "the tongue of *Zosterops* . . . has no similarity to the 'brush' tongue of the Honey-sucker," but does not mention the species to which his observations refer.

provided with only three or four spines, it is covered with numerous very short pointed processes. But the most important difference concerns the free extremity of the tongue; this is split in two, as in *Zosterops lateralis*, but in addition to this each half is frayed out into two or three bristle-like processes.

Fig. 1.

Upper surface of tongue of *Zosterops simplex*, magnified.

In the two specimens from Japan the tongue was a little different; in one of them the upper surface was nearly flat, but the bifid extremity was frayed out into a number of processes.

In the other specimen the edges of the tongue were decidedly more rolled over towards the middle line than in *Zosterops simplex*. As long as the specimens were kept wet, the two edges of the tongue did not actually meet in the middle line, although forming by their close approximation a deep trough with an almost circular section; when the tongue was allowed to become dry, its margins actually joined in the middle line, and temporarily converted the trough into a tube for the greater part of the length of the anterior portion of the organ. The extremity of the tongue was frayed out, as in both the other specimens of *Zosterops* that I have examined. Unfortunately I was quite unable to

make out whether the difference in the tongues of the two Japanese birds were correlated with differences of sex. The birds had been in spirit for a good many years, and the viscera were too much softened to permit of a determination of the sex.

It is evident, therefore, that the simple structure of the tongue described by Dr. Gadow in *Zosterops lateralis* does not characterize the genus; we have in *Zosterops simplex* and in *Zosterops japonica** a transition towards the more complicated form of tongue of the Meliphaginæ, both in the frayed-out extremity and in the folded margins. Dr. Gadow states that *Zosterops* is not a Honey-sucker; nevertheless the form of the tongue is such as to suggest that *Zosterops simplex* and *Z. japonica* may belong to that group.

II. *On the Convoluted Trachea of Manucodia comrii.*

Some time ago Mr. Sclater kindly put into my hands a body of *Manucodia comrii*, showing the convoluted trachea in position.

That the trachea of this genus has a subcutaneous convolution lying upon the pectoral muscles has been known for a long time; but up to the present the trachea of this particular species (*Manucodia comrii*) has not, so far as I am aware, been described or figured. I am therefore greatly indebted to Mr. Sclater for enabling me to examine the structure of the windpipe in this species.

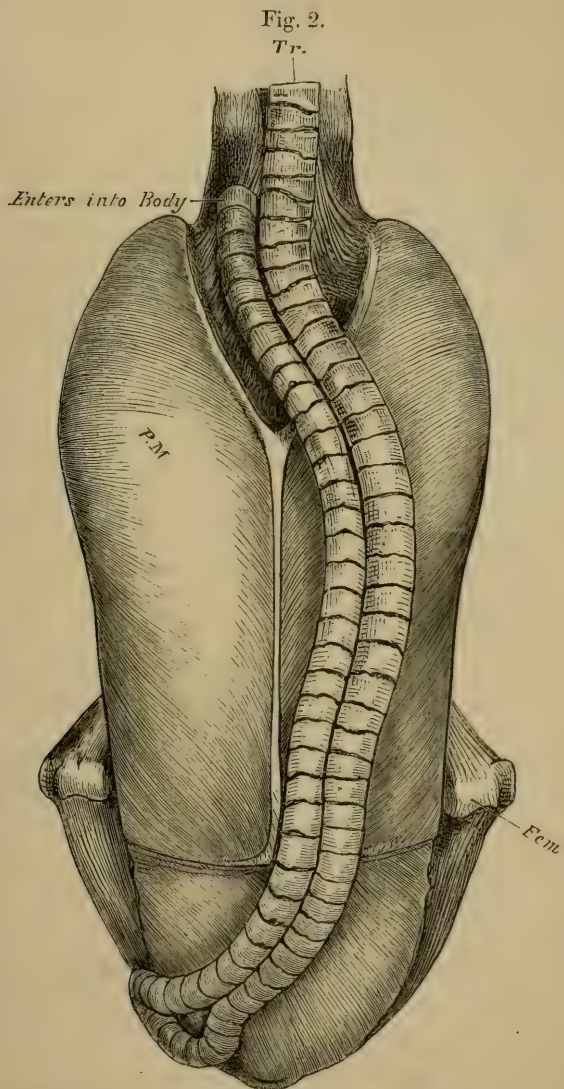
In the 'Proceedings' of the Zoological Society of London for 1882†, my predecessor, the late Mr. W. A. Forbes, has given a very useful summary of what was then known with regard to the convoluted trachea of birds, devoting some space to a consideration of *Manucodia* and of the allied genus *Phonygama*.

It appears from this paper that in *Manucodia* the adult

* This is the only species occurring in Japan, according to Seeböhm ('Birds of Japan,' p. 68).

† "On the Convoluted Trachea of two Species of Manucode (*Manucodia atra* and *Phonygama gouldi*), with Remarks on similar Structures in other Birds," P. Z. S. 1882, p. 347.

males only have a convoluted trachea, which varies in the extent of its development in the three species in which it has been examined.



Upper surface of body of *Manucodia comrii*, showing the trachea.

Tr. Trachea; *P.M.* Pectoralis Muscle; *Fem.* Femur.

In *Manucodia atra* the trachea forms only "a short loop lying on the interclavicular air-cell, between the rami of the furcula, much as in many specimens of the genus *Craa*." In *Manucodia chalybeata* and *M. jobiensis* the loop extends about two thirds down the surface of the pectoral muscles.

Manucodia comrii (fig. 2, p. 513) has a much more extensive loop than any other species: in the specimen before me the two sections of the trachea which form the loop run closely adherent to each other in a slightly sinuous course to the left of the sternal keel; they are directed beyond the pectoral muscles somewhat obliquely, and finally end on the right side of the body in the immediate neighbourhood of the cloaca, slightly overlapping the posterior border of the thigh-muscles. The accompanying figure, which is of natural size, will give a correct idea of the course of the loop.

The bird proved on dissection to be a male.

The species *Manucodia comrii* was described some years ago* by Mr. Selater as "the finest and largest" of the genus; the bill is longer and the curling of the feathers of the head is carried to a greater extent. It is interesting to find the tracheal loop also showing a more pronounced character than in other species.

XLIII.—On Recent Advances in our Knowledge of the Geographical Distribution of Birds. By the EDITOR†.

It is now nearly thirty-four years ago since I read before the Linnean Society of London a memoir on the geographical distribution of the Class of Birds (1)‡, in which, after a preliminary discussion upon the subject, I pointed out what I considered to be a most natural way of dividing the earth's surface, looking only to the distribution of the families,

* "On the Birds collected by Dr. Comrie on the South-east Coast of New Guinea during the Survey of H.M.S. 'Basilisk,'" P. Z. S. 1876, p. 459.

† Slightly modified from an Address to the Second International Ornithological Congress at Budapest in May 1891.

‡ The numbers in brackets refer to the titles of works given in the Appendix, pp. 548-557.